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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,884	02/17/2004	Bradley Joseph Dewispelaere	DP-310280	9637

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EXAMINER

BERTHEAUD, PETER JOHN

ART UNIT PAPER NUMBER

3746

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/779,884

Applicant(s)

DEWISPELAERE ET AL.

Examiner

Peter J. Bertheaud

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/17/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: On page 5, paragraph 27, line 4, the term "engage" should be changed to "engaged".

Appropriate correction is required.

### ***Claim Objections***

2. Claim 8 objected to because of the following informalities: On page 11, lines 1 and 6, the word "rotatably" and "rotatebly" are used. Please spell these words identically if they are indeed supposed to have the same meaning. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Skinner 4,428,718.

Skinner discloses a variable displacement compressor comprising: a drive shaft 26 extending along a longitudinal axis; a swash plate assembly 50 operatively connected to and driven by said drive shaft; a retainer ring 32 for disposition about said drive shaft, and said drive shaft having first (groove inside 32) and second (groove that contains spring 107) annular grooves therein and spaced longitudinally from one

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another. Skinner also discloses that a conical ramp (see ramp extending from 32) extends out of said first annular groove toward said second annular groove. Skinner discloses that said drive shaft has a variable diameter between said grooves and that each of said first and said second annular grooves includes a bottom and parallel sides (see 26 in Fig. 1). Skinner discloses that one of said sides of said first and second annular grooves extend perpendicularly to said longitudinal axis from said bottom thereof to said variable diameter and the other side of the first annular groove intersects with said conical ramp (see 26 in Fig. 1). Skinner further discloses that said swash plate assembly includes a resilient member 107 disposed annularly about said drive shaft and between said swash plate assembly 50 and said retainer ring to provide a biasing force against said retainer ring (see col. 3, lines 56-61).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over anticipated by Skinner 4,428,718 in view of Kato 5,772,407, Tagami 6,578,465, Kurosawa 4,732,544, and Hiraga 4,586,874.

Skinner discloses the invention as discussed above, as well as a central housing 20 having terminal ends; a rear housing 24 connected to said central housing at one

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terminal end of said central housing; said rear housing having an opening and a plurality of holes spaced one from the other and extending along said longitudinal axis from said rear housing to said opening; a crank chamber 42 defined within said central housing; a front housing 22 connected to said central housing at the other of said terminal end; a suction chamber 114 defined within said front housing; said drive shaft has first and second ends and being rotateably supported and engaged within said central housing (see Fig 1); a first needle bearing 30 disposed annularly about said first end of said drive shaft and supported by said rear housing; a second needle 28 bearing disposed annularly about said second end of said drive shaft and being supported by said central housing for rotateably supporting said drive shaft within said compressor (see Fig. 1). Skinner teaches the invention as claimed except for the following limitations taught by Kato.

Kato teaches a reciprocating type piston compressor including a drive shaft 9, a swash plate 10, and pistons 13. Kato further teaches that the first end of said drive shaft including a plurality of spline teeth integral with and extending radially outwardly from and longitudinally along said first end of said drive shaft (see 9 in Fig. 1). Kato teaches that this would be advantageous because it allows the compressor to be connected to a rotary drive source.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the variable displacement compressor of Skinner by including a plurality of spline teeth on the front end of the compressor shaft, as taught by Kato, in

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order to operatively connect the compressor to a rotary drive source (see col. 3, lines 21-25).

Skinner in view of Kato teaches the invention as claimed except for the following limitations taught by Tagami.

Tagami teaches a swash plate-type variable displacement compressor including a drive shaft 1, a swash plate 3, and pistons 5. Tagami further teaches that the swash plate 3 assembly including a drive hub 2 rotatable with said drive shaft 1; said drive hub including a generally tubular portion surrounding said drive shaft and radial flange extending from said tubular portion to a periphery; said radial flange presenting a boss 2a at said periphery; a first pin 11 extending through said boss spaced from and transversely to said drive shaft; a journal member (see element on which 3 rests); a second pin 12 extending through said extension in parallel and spaced relationship to said first pin; a hinge link 10 interconnecting said pins for rotating said journal member with said drive hub while allowing said journal member to tilt relative to said longitudinal axis; a swash plate 3 of a generally circular configuration extending from said journal member to a peripheral edge for rotating with said journal member; at least one piston 5 including a pair of shoes 4 and being coupled to said swash plate through said shoes (see Fig. 2). Tagami teaches that these aspects of the invention would be advantageous because when implemented the resultant vibration of the compressor can be reduced.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the variable displacement compressor of Skinner in view of Kato by

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connecting a drive hub to a journal and swash plate assembly via a hinge, as taught by Tagami, in order to operatively reduce the resultant vibration of the compressor (see col. 5, lines 19-24).

Skinner in view of Kato and Tagami teaches the invention as claimed except for the following limitations taught by Kurosawa.

Kurosawa teaches a variable capacity wobble plate compressor including a drive shaft 7, a swash/wobble plate 66, and a drive hub 53. Kurosawa further teaches a sleeve 58 disposed about said drive shaft and axially spaced from said drive hub; a journal member 52 supported by and connected to said sleeve, and having an extension 66 extending from said journal member. Kurosawa teaches that this would be advantageous because the configuration allows the swash plate to swing about the sleeve causing the pistons to make reciprocating motion within their respective cylinders.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the variable displacement compressor of Skinner in view of Kato and Tagami by connecting a sleeve and journal assembly to the drive shaft, as taught by Kurosawa, in order to allow the swash plate to swing about the sleeve causing the pistons to make reciprocating motion within their respective cylinders (see col. 8, lines 33-39).

Skinner in view of Kato, Tagami, and Kurosawa teaches the invention as claimed except for the following limitations taught by Hiraga.

Hiraga teaches a refrigerant compressor including a drive shaft 12, a swash plate assembly 14 and 15, a drive hub 141, and a sleeve assembly 16 and 42. Hiraga further teaches a resilient member 19 being further defined by a first coil spring disposed annularly about said drive shaft and between said drive hub and said sleeve; and a second resilient member 19 disposed annularly about said drive shaft between said sleeve and said retainer ring 21 disposed in said first annular groove (see Figure). Hiraga teaches that this would be advantageous because it helps to secure the sleeve member.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the variable displacement compressor of Skinner in view of Kato, Tagami, and Kurosawa by implementing two resilient members on the drive shaft, as taught by Hiraga, in order to allow the swash plate to swing about the sleeve causing the pistons to secure the sleeve member (see col. 3, lines 24-27).

### ***Conclusion***

7. The prior art made of record, noted in the attached form 892, and not relied upon is considered pertinent to applicant's disclosure.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Bertheaud whose telephone number is (571) 272-3476. The examiner can normally be reached on M-F 9am - 5pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on (571) 272-4828. The fax phone




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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
PJB  
11/27/06

  
EHUD GARTENBERG  
SUPERVISORY PATENT EXAMINER